

ABSTRACT

The present invention relates to a biocompatible support structure for culturing
5 cells in three dimensions. In a preferred embodiment, the support structure is
constituted essentially of cross-linked polyvinylalcohol (PVA). More preferably,
the matrix has the form of a sponge and is used for the culture of hepatocytes.
The invention also relates to methods of manufacturing such structure and to
methods of using the same *in vitro*, *ex vivo* as well as *in vivo*. The invention
10 further relates to a bioartificial organ and to a tridimensional cell culture system
which may be used for the production of therapeutic proteins, used as a
detoxification device, used as a tool in predictive toxicology of compounds in the
pharmaceutical industry and/or used for transplantation.